

REMARKS

The Official Action of 28 December 2006 has been carefully considered and reconsideration of the application as amended is respectfully requested.

New claim 30 has been added more completely to define the subject matter which Applicants regard as their invention. Support for the recitations in claim 30 appears in the specification as filed at, for example, the paragraph bridging pages 2-3 and the paragraph bridging pages 8-9.

Claims 9, 10, 16, 24 and 29 stand rejected under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Coran et al. Claims 1, 6, 7, 12, 14, 18-21, 23, 25 and 26 stand rejected under 35 USC 103(a) as being unpatentable over Coran et al. Applicants respectfully traverse these rejections.

The claimed invention is based at least in part upon Applicants' finding that the shape of the rubber phase of a fully vulcanized thermoplastic elastomer affects the rheological properties and processability of the fully vulcanized thermoplastic elastomer. Specifically, Applicants found that, if the shape of the rubber phase is irregular, this has an adverse effect on the rheological properties and processability (see specification at paragraph bridging pages 2-3), whereas, if the fully vulcanized powdery rubber is formed by irradiating a feed rubber latex, the rubber phase of the fully vulcanized thermoplastic elastomer will have a regularly spheroidic shape (specification at paragraph bridging pages 8-9) and the particles in the rubber phase will

have a particle size that is substantially the same as the size of the rubber particles in the latex (specification at paragraph bridging pages 6-7).

In contrast, Coran et al only teach a vulcanized powdery rubber prepared by grounding (see col. 3, lines 62-64) as a starting material of the composition disclosed therein, and the powdery rubber should preferably be prepared by dynamic vulcanization (col. 6, lines 59-61). It would be expected that prevulcanized rubber particles ground to desired size would be of irregular shape, necessarily having some edges and corners. In contrast, vulcanized rubber particles prepared by vulcanizing a corresponding rubber latex with irradiation will be of spheroidic shape, though not perfectly spherical, having no edges and corners, because rubber particles in the latex prior to irradiation are approximately spherical and the irradiation will not alter the shape of the rubber particles.

All claims presently of record require that the recited vulcanized rubber particles be prepared by vulcanizing a corresponding rubber latex with irradiation whereby they have the desired spheroidic shape. The Examiner has acknowledged that the cited reference (a) does not teach preparing the claimed fully vulcanized powdery rubber by vulcanizing a corresponding rubber latex with irradiation and (b) does not explicitly teach rubber particles of the claimed spheroidic shape. Nevertheless, the Examiner contends, with respect to (a), that this is a product-by-process limitation that requires Applicants to present a showing of unexpected results and, with respect to (b), that the Coran et al rubber particles would inherently have the claimed spheroidic shape. Applicants respectfully submit that the Examiner is in error on both

counts, as next discussed.

A. The Office Should Consider the Structure Implied by the Process Steps When Assessing the Patentability of the Product-by-Process Claims

As set forth in MPEP 2113: “the structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where. . . the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product.” As discussed above, it would be expected that the prevulcanized rubber particles ground to desired shape according to Coran et al would be irregular and would not have the same structural characteristics as the particles prepared by the process as claimed.

The Office Action respectfully contains no indication that the Examiner has considered the structure implied by the recited process steps and, accordingly, Applicants respectfully submit that the rejection is improper for at least this reason. In this connection, Applicants recognize that the Patent Office bears a lesser burden of proof in making out a case of *prima facie* obviousness for product-by-process claims than when a product is claimed in the conventional fashion. Nevertheless, the Office still has the initial burden of providing a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, before the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and

the prior art product (see MPEP 2113).

In the present case, Applicants respectfully submit that the Examiner has not met the Office's initial burden of providing a rationale for the position that the rubber particles of spheroidic shape produced by the recited process would be the same or similar to the rubber particles ground to shape as taught by Coran. In fact, since the respective rubber particles would be expected to differ in shape (see discussion above), Applicants respectfully submit that the Examiner cannot provide such rationale. This is confirmed by the issuance of patents (see, for example, US Patents 6,423,760 and 6,838,490) which provide evidence of the distinctiveness of the claimed fully vulcanized powdery rubbers.

In short, since one of skill in the art would expect the claimed rubber particles produced by the recited method to have different characteristics from the rubber particles produced by the prior art method, Applicants respectfully submit that the Office cannot meet its initial burden and that burden of proof cannot shift to Applicants. Accordingly, the cited reference cannot set forth even a *prima facie* case of obviousness for the invention as claimed for at least this reason.

B. The Rubber Particles Prepared According to Coran Would Have an Irregular Shape Which is Not Spheroidic

As discussed above, it would be expected that prevulcanized rubber particles prepared

by grounding of a rubber phase in a thermoplastic elastomer prepared by dynamic vulcanization techniques would be of irregular shape, with edges and corners, due to shearing action.

Applicants respectfully submit that such particles of irregular shape cannot be considered to be "spheroidal" under any dictionary definition of the term, including the dictionary definition relied on by the Examiner, i.e. "a figure representing a sphere; an object of approximately spherical shape".

Indeed, the Examiner supports his contention that the Coran rubber particles are spheroidic in shape only by the artifice of considering the shape by "visual judgment" that depends on "perspective". Applicants respectfully submit that this is inappropriate. An article has a certain shape or it doesn't; an article's shape does not depend on the perspective by which it is viewed (although the perception of the shape might). Thus, a non-spheroidic flake on the ground does not become spheroidic when it is viewed from the top of the Sears Tower. Similarly, a non-spheroidic particle that requires magnification to see with the visual eye does not become spheroidic when it is viewed without magnification. If it were otherwise, one would never be able to speak of the shape of a microscopic article, such as a molecule, without also referring to a level of magnification (but see the US patents which claim, for example, the specific shapes of molecules).

Moreover, by determining shape in this manner, the Examiner has respectfully provided the term "spheroidic" with a flexible definition depending on a viewer's perspective. Applicants respectfully believe that such an approach would render an otherwise definite term indefinite so

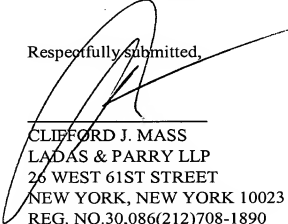
as to render it useless to define shape. But see, e.g., the following patents with claims that define a shape as "spheroidic": US Patents 6,882,408; 6,174,345; 6,018,387; and 5,135,720.

Aside from the improper "viewer's perspective" approach discussed above, the only other rationale provided by the Examiner to support his position that the Coran rubber particles are spheroidic is the contention that Coran et al say nothing about an aspect ratio. Applicants respectfully note, however, that Coran's **silence** cannot be used suggest that Coran's pulverized particles are spheroidic. In any event, irregularly-shaped particles, such as Coran's, also cannot be described by aspect ratio.

In short, Applicants respectfully submit that the Examiner has not shown that the cited prior art reference teaches or suggests **all** of the claim limitations, as would be required to set forth a *prima facie* case of anticipation or obviousness. Accordingly, Applicants respectfully submit that the rejections of record should be withdrawn.

In view of the above, Applicants respectfully submit that all rejections and objections of record have been overcome and that the application is now in allowable form. An early notice of allowance is earnestly solicited and is believed to be fully warranted.

Respectfully submitted,



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